## Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

## Listing of Claims:

Claims 1-8 (Canceled)

Claim 9 (New): A method of controlling semiconductor manufacturing equipment, comprising:

sampling a plurality of sample data of at least one parameter which represents a manufacturing condition, under a normal operating state of the semiconductor manufacturing equipment;

generating a Mahalanobis space based on the plurality of sample data;

calculating a Mahalanobis distance based on the Mahalanobis space and a group of operating data of the at least one parameter measured during an operating state of the semiconductor manufacturing equipment; and

stopping operation of the semiconductor manufacturing equipment when the Mahalanobis distance exceeds a threshold value.

Claim 10 (New): A semiconductor device produced in accordance with the method of claim 9.

Claim 11 (New): The method of controlling semiconductor manufacturing equipment of claim 9, wherein the at least one parameter is plasma emission intensity.

Claim 12 (New): The method of controlling semiconductor manufacturing equipment of claim 9, further comprising generating an alarm when the Mahalanobis distance exceeds the threshold value.

Claim 13 (New): A method of controlling semiconductor manufacturing equipment, comprising:

sampling a plurality of sample data of at least one parameter which represents a manufacturing condition, under a normal operating state of the semiconductor manufacturing equipment;

standardizing the plurality of sample data using a standardizing calculator, to provide a plurality of standardized sample values;

measuring a group of operating data of the at least one parameter during an operating state of the semiconductor manufacturing equipment;

standardizing the group of operating data using the standarizing calculator, to provide a group of standardized operating values;

calculating a similarity value using a value calculator, based on the standardized sample values and the standardized operating values; and

stopping operation of the semiconductor manufacturing equipment when the similarity value exceeds a threshold value.

Claim 14 (New): A semiconductor device produced in accordance with the method of claim 13.

Claim 15 (New): The method of controlling semiconductor manufacturing equipment of claim 13, further comprising:

obtaining a set of matrix elements using a matrix calculator, based on the standardized sample values,

said calculating uses the set of matrix elements and the standardized operating values to calculate the similarity value.

Claim 16 (New): The method of controlling semiconductor manufacturing equipment of claim 13, wherein the semiconductor manufacturing equipment is a plasma etching system,

the at least one parameter represents an intensity of a desired wavelength of plasma emission for forming etched holes on a semiconductor substrate used for forming a semiconductor wafer.

Claim 17 (New): The method of controlling semiconductor manufacturing equipment of claim 13, wherein the standardizing calculator uses an equation

$$Y_{n \cdot m} = (Y'_{n \cdot m} - Ave_n)/\sigma_n,$$

wherein $Y'_{n \cdot m}$ is a sample data at an appointed time $X_n$ in m time sampling, $Ave_n$

is an average of a group of sample data measured at time $X_n$, $\sigma_n$ is a standard deviation

of data at time $X_n$, and $Y_{n,m}$ is a standardized sample value at $X_n$,

whereby n is an integer from 1 to n and m is an integer from 1 to m.

Claim 18 (New): The method of controlling semiconductor manufacturing equipment of

claim 17, wherein the matrix calculator uses an equation

$$r_{ij} = r_{ji} = \frac{1}{m} \sum_{p=1}^{m} Y_{i \cdot p} Y_{jp} \ ,$$

wherein $r_{ij}$ and $r_{ji}$ are matrix elements and $i$ and $j$ are integers from 1 to n.

Claim 19 (New): The method of controlling semiconductor manufacturing equipment of

claim 18, wherein the value calculator uses an equation

$$D^2 = \frac{1}{n} \sum_{i=1}^{n} \sum_{j=1}^{n} a_{ij} Y_i Y_j,$$

wherein D is the similarity value and $a_{ij}$ are matrix elements of an inverse matrix

of the set of matrix elements obtained by the matrix calculator during said obtaining.

Claim 20 (New): The method of controlling semiconductor manufacturing equipment of

claim 19, wherein the threshold value is within a range of 2 to 4.

Claim 21 (New): The method of controlling semiconductor manufacturing equipment of claim 13, wherein the at least one parameter is plasma emission intensity.

Claim 22 (New): The method of controlling semiconductor manufacturing equipment of claim 13, further comprising generating an alarm when the similarity value exceeds the threshold value.